APRIL 1960 VOL. VIII

EXTERNAL
22 AUG 1960
RECEIVED

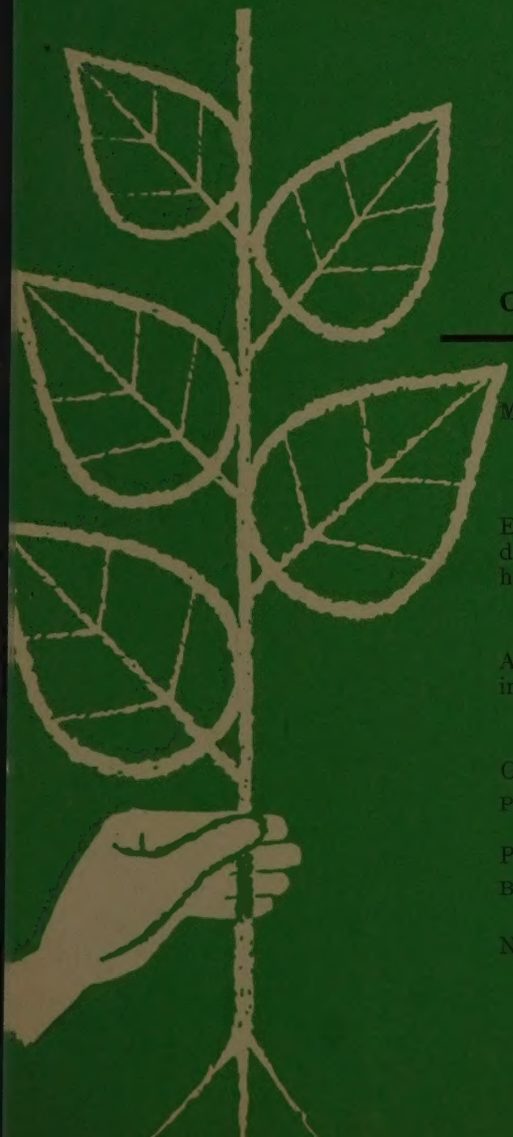
FAO

OOD AND AGRICULTURE
RGANIZATION OF THE
NITED NATIONS - ROME

PLANT PROTECTION BULLETIN

A PUBLICATION OF THE WORLD REPORTING SERVICE ON PLANT DISEASES AND PESTS

7



CONTENTS

Mosaic of rice in the Philippines
A.L. Martínez, H.T. Bergonia, J.T. Escober and B.S. Castillo 77

Experimental transmission of vine "infectious degeneration" virus and its occurrence on various host in Italy
R. Ciferri and A. Corte 79

Annual and monthly frequencies of desert locust infestations
O.B. Lean 82

Outbreaks and new records 86
Peru

Plant quarantine announcements 87
Belgium, Chile, France, United States

News and notes 88

COMMONWEALTH MYCOLOGICAL
23 AUG 1960

is issued as a medium for the dissemination of information received by the World Reporting Service on Plant Diseases and Pests, established in accordance with the provisions of the International Plant Protection Convention, 1951. It publishes reports on the occurrence, outbreak and control of pests and diseases of plants and plant products of economic significance and related topics, with special reference to current information. No responsibility is assumed by FAO for opinions and viewpoints expressed in the Bulletin.

Manuscripts for publication, or correspondence regarding the World Reporting Service, should be addressed to Dr. Lee Ling, Plant Production and Protection Division, FAO, Viale delle Terme di Caracalla, Rome, Italy ; subscriptions and other business correspondence to the Distribution and Sales Section, FAO, Viale delle Terme di Caracalla, Rome, Italy.

The Bulletin is issued monthly in English, French, and Spanish, and twelve numbers, commencing with the October issue in each year, constitute a volume. Subscription rates are $5.00 or 25s. per annum ; single numbers are priced at $0.50 or 2s. 6d. The citation is FAO Plant Protection Bulletin or, in abbreviation, FAO Plant Prot. Bull

Vol. VIII, No. 7 - April 1960

FAO PLANT PROTECTION BULLETIN

A PUBLICATION OF THE WORLD REPORTING SERVICE ON PLANT DISEASES AND PESTS

Mosaic of Rice in the Philippines

A.L. Martinez, H.T. Bergonia, J.T. Escober and B.S. Castillo,
Bureau of Plant Industry, Manila

Mosaic was observed in the newly introduced Japanese rice variety Leuang Yai on 5 February 1960 by the writers in the rice experiment field of the Bureau of Plant Industry in Manila. Rice plants were infected to the extent of 8 to 10 percent.

This new disease of rice of virus origin, which is reported here for the first time in the Philippines, appears to be similar to the mosaic diseases reported and described on other gramineous plants in Puerto Rico (2), Tunisia (1) and South America (4). However, it does not seem to be related to rice dwarf, hoja blanca or any other virus disease hitherto described on rice.

Infected rice plants in the field can be readily noted by the presence of foliar mottling, which is the most characteristic symptom of the disease (Figure 1). The mottled areas of an infected leaf are irregular in shape and vary in size from greenish dots to elongated yellowish/green lesions and they may coalesce to form chlorotic streaks with their long axis parallel to the veins of the leaf. Mottling is also observed on leaf sheaths.

Rice plants seriously infected by mosaic are stunted in growth. The leaves are very much mottled. At the later stages of development, the infected leaves gradually turn yellowish brown to brown and eventually wither. Invariably, only a very small number of tillers are produced by the infected plants. Symptoms of the disease are equally manifested on leaves and leaf sheaths of the tillers.

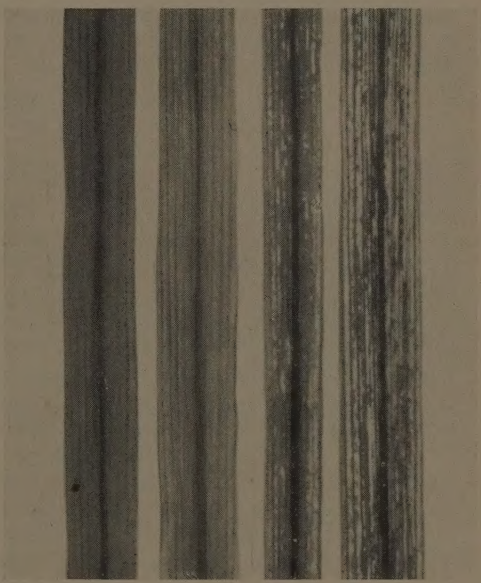


Figure 1. Leaves of the Japanese rice variety Leuang Yai. The two at the left are healthy ; the other two at the right are infected with mosaic. Note the characteristic symptoms of the disease which consist of greenish dots and elongated yellowish green areas forming chlorotic streaks with their long axis parallel to the veins of the leaves.

Transmission

Preliminary transmission experiments show that rice mosaic is transmissible mechanically to maize seedlings of the variety Cuban Yellow flint. Two methods of transmission were used. In the first method, ten healthy maize seed-

lings were inoculated by rubbing lightly the upper surface of the leaves previously dusted with carborundum 320 with a piece of sterile cheesecloth dipped into the sap expressed from leaves of infected rice plants. The same number of seedlings which served as check were similarly treated, except that the leaves were rubbed with sap of healthy plants. Of the ten seedlings inoculated, seven were infected after seven to nine days. The check plants remained healthy throughout the experiment. In the second method, the pin-prick technique described by Celino and Martinez (3) for the transmission of abaca mosaic to maize was followed. Of the ten seedlings inoculated five showed symptoms of the disease after seven to ten days, while the control plants appeared healthy.

On inoculated maize seedlings the symptoms induced by the mosaic virus appear first as interrupted pale green streaks on newly unfolded leaves. As infection progresses, those interrupted pale-colored streaks appear in greater numbers on leaves succeedingly developed to form a very mild mosaic pattern. The mosaic pattern seems to become less evident as the leaves mature, and a partial masking of the symptoms takes place later.

Based upon the symptomatology of the disease on the hosts and the results obtained from preliminary transmission experiments, the writers suspect that the mosaic disease of rice in the Philippines seems to be closely related to, if not identical with, one of the mosaic diseases affecting grasses. Experiments on various methods of transmission with the use of insects and mechanical means, on the relation between this disease and mosaic diseases of grasses, and on the host range are now in progress.

Literature cited

1. Beauverie, M.A. 1932. Les maladies a ultra virus des plantes. *Ann. Serv. Bot. Agron. Tunisie* 9 : 1-163.
2. Brandes, E.W. 1919. The mosaic disease of sugar cane and other grasses. *U.S. Dept. Agr. Bull.* 829.
3. Celino, M.S. and A.L. Martinez. 1955. Mechanical transmission of a mosaic virus from abaca to corn. *Philippine Agriculturist* 39 : 377-392.
4. Horovitz, N. and H. Pogliaga. 1934. Número de cromosomas de *Oryza subulata* Nees. *Rev. Argent. Agron.* 1 : 230-231.

Experimental Transmission of Vine "Infectious Degeneration" Virus and its Occurrence on Various Host in Italy

R. Ciferri and A. Corte, Botanic Institute, University of Pavia, and Cryptogamic Laboratory, Ministry of Agriculture and Forestry, Pavia

The virus disease of grapevine now known as "infectious degeneration" is widespread in the Mediterranean region and, according to its dominant symptoms, it has been called arricciamento, laciniatura, roncet, courtnoué, Reisigkrankheit, urticado, Kurtschwostj and other names. During the last years, the disease spread in Italy with increased intensity at an alarming rate.

Successful transmission of the disease experimentally to some herbaceous plants commonly used for the differentiation of viruses was reported by Ochs (5) in 1958 but her results do not seem to have been confirmed later.

The present notes summarize the results obtained by the writers on artificial transmission of the "infectious degeneration" virus and their observations on its host range.

Experimental transmission

After several years of trials, during which thousands of chip buddings were performed, using about 100 species of trees and bushes belonging to more than 40 families, the "infectious degeneration" virus was successfully transmitted to woody plants outside the family Vitaceae. Baldacci (1) classified the symptoms of "infectious degeneration" into three groups, namely: (*a*) malformation of leaves and shoots; (*b*) foliage mosaic; and (*c*) foliage yellowing. Symptoms of groups (*a*) and (*c*) were also shown on plants experimentally infected.

Somewhat milder and less constant symptoms were obtained on mazzard cherry variety F. 12/1. Less conspicuous but comparable symptoms were shown on other species, including *Datura arborea, Ligustrum ovalifolium, Prunus myrabolana, Mahonia japonica, Rhamnus purshiana* and *Platanus orientalis*.

Among the plants artificially infected, *Ligustrum lucidum* proves to be an excellent indicator plant for the disease. On this species, the first symptoms consist of light discoloration of leaves in a mosaic pattern, followed by deformation and reduction of the size of shoots and premature defoliation. Symptoms on flowers and fruits are under study. Transmissibility of the disease was verified by back inoculation from *Ligustrum* to grapevine.

Following the description and classification of the diagnostic symptoms of the "infectious degeneration" disease reported by Fogliani (4), 26 symptoms were found on the grapevine plants from which the inoculum was obtained, whereas on the plants of *Ligustrum lucidum* inoculated with this virus, 23 out of those symptoms were observed in 2½ years after inoculation. The most characteristic symptoms on *L. lucidum* are shown in Figure 1. Detailed descriptions of those symptoms have been published previously (2, 3).

On infected plants of *Ligustrum lucidum*, there is one characteristic which has not been observed on grapevine, i.e., the absence of cuticle on some parts of the lower surface of the leaf. It is therefore of interest to note that a similar symptom was recently found in Istria in grapevine leaves manifesting bright lesions (6).

Ligustrum lucidum is usually reproduced by seed. In order to avoid variation in the reaction to the disease, vegetative propagation of selected clones is being undertaken to provide standard material to be used as an indicator.

Further transmission trials of the "infectious degeneration" virus were carried out with some herbaceous plants commonly used for diagnosing viruses. Such plants were kept before

Figure 1. Characteristic symptoms caused by vine "infectious degeneration" virus on *Ligustrum lucidum*. Healthy leaf and stem are marked "H."

inoculation at a temperature of 36° C. and afterwards at alternate temperatures, 10-12°C. during the night and 20-30°C. during the day. Relatively nonspecific symptoms were obtained on *Datura stramonium* and *D. stramonium* var. *inermis*, showing foliage mosaic with minute dots followed by necrosis, on tomato of unknown variety, showing mild mosaic and malformation of leaves, and on pumpkin (*Cucurbita pepo* var. *cucurbitella*), variety Tonda di Bologna, showing chlorotic speckles followed by necrosis. It should be emphasized, how-

ever, that the symptoms appeared only on a small number of inoculated plants (*Datura* 12 percent, tomato 8 percent and pumpkin 5 percent) and the symptom expression was not constant. Therefore, little importance should be attached to the negative results obtained with other indicator plants.

Natural hosts

On many occasions, wild and cultivated plants grown in vineyards were observed to display symptoms of obvious virus origin. This has aroused the suspicion that the "infectious degeneration" virus might be transmitted in nature to some plants other than grapevine. In particular, the writers' attention was directed to tomato plants of unknown variety, *Artemisia campestris*, *Salix alba* and *Ligustrum ovalifolium*, growing near diseased vine plants. Material from these plants was chip-budded to *L. lucidum*. Only when budded with *L. ovalifolium*, *L. lucidum* showed symptoms which completely correspond to those produced by the "infectious degeneration" virus transmitted artificially from grapevine.

Naturally infected *Ligustrum ovalifolium* plants are somewhat stunted, with altered phyllotaxy and light discoloration and malformation of leaves; such symptoms are identical with those obtained by artificial transmission.

Although results on the transmission of the virus to grapevine from these plants are not yet available, there are good indications to lead to the belief that plants of various genera, cultivated or spontaneously grown in vineyards, are hosts of the vine "infectious degeneration" virus.

LITERATURE CITED

1. BALDACCI, E. 1959. Virosi e miglioramento genetico della vite. *Not. Mal. Piante* 47-48 (N.S. 26-27) : 29-37.

2. CIFERRI, R., A. CORTE and G. SCARAMUZZI. 1959. Suscettibilità di piante arboree alla sindrome virosica della "degenerazione infettiva" della vite. *Atti Ist. Bot. Univ. e Lab. Critt. Pavia*, Ser. 5, 16 : 335-352.

3. CORTE, A., R. CIFERRI and G. SCARAMUZZI. 1959 .Trasmissione della "degenerazione infettiva" della vite sul *Ligustrum lucidum* Ait. e ad altre specie arboree. *Rivista Viticolt. e Enologia* 12 : 239-248.

4. FOGLIANI, G. 1955. Ricerche sperimentali sulla "degenerazione infettiva" della vite. Analisi dei sintomi da "degenerazione" e da altre forme patologiche : descrizione, classificazione, nomenclatura. *Ann. Sperim. Agraria N.S.* 9 : 189-207, 263-300.

5. OCHS, G. 1959. Ueber drei Viren als Erreger von Rebkrankheiten. *Zeitschr. Pflanzenk. und Pflanzen.* 65 : 11-17.

6. SABADOS SARIČ, A. and A. CORTE. 1960. Dati preliminari su una forma di "degenerazione infettiva" della vite in Istria a complesso sintomatologico insolito. *Atti Ist. Bot. Univ. e Lab. Critt. Pavia*, Ser. 5, 17 (In press).

Annual and Monthly Frequencies of Desert Locust Infestations[1]

O.B. Lean,[2] Plant Production and Protection Division, FAO, Rome

Existing knowledge of the desert locust (*Schistocerca gregaria* Forsk.) is insufficient to plan measures for the prevention of plagues on lines comparable to those successfully adopted against the African migratory locust (*Locusta migratoria migratorioides* R. & F.) and the red locust (*Nomadacris septemfasciata* Serville). This fact was stressed by the FAO Panel of Experts on Long-Term Policy of Desert Locust Control[3] held in 1956. While work upon the lines then proposed to develop a long-term preventative plan is proceeding with increased momentum, desert locust control continues to depend upon plague suppression.

Prior to about 1942 measures directed against the desert locust were virtually restricted to the direct defence of crops when swarms reached agricultural areas. The conception of defence in depth, introduced in 1942, has subsequently been developed. This strategy implies striking at the locusts, normally in the hopper stages, though frequently also as adults, wherever they may be reached, irrespective of the infestation's proximity to agriculture. Despite its high cost, this strategy has undoubtedly reduced crop damage very appreciably. Nevertheless, despite new techniques, increased mechanization, higher expenditure and better interterritorial collaboration, the results from this strategic approach remain inadequate. The policy of defence in depth appears fundamentally sound, but it has failed to achieve more than suppression of plagues to a fairly reasonable level, eliminating general crop damage, though not preventing periodical heavy localized losses nor permitting any relaxation of over-all costly control operations.

Against this background, FAO convened another Panel of Experts in 1959 to review the strategy of desert locust plague control. The Panel's report[4] contains much fundamental information, mainly resulting from studies made by the Anti-Locust Research Centre, London, of data it has collected over a period of about 30 years.

A salient feature was the analysis of the seasonal expansion and contraction of desert locust plague activity over the 30 million square kilometers of Africa and southwestern Asia which are subject to attacks by this locust. The existence of relatively restricted high-frequency breeding areas and more extensive swarm-frequency areas was recorded by the 1956 Panel of Experts. The 1959 Panel studied the seasonal distribution of swarms and hoppers and concluded that:

(*a*) during the first quarter of the year swarms were widely distributed and breeding areas were very localized;

(*b*) during the second quarter swarms and breeding were both widespread;

(*c*) during the third quarter swarm and breeding areas were both relatively restricted and largely coincided in location;

(*d*) during the fourth quarter swarms were widespread and breeding areas were restricted.

These conclusions are clearly demonstrated in the frequency maps prepared by the Anti-Locust Research Centre and included in the report of the Panel of Experts in 1959.

During recent years the phenomena of the expansions and regressions of the desert locust

---

[1] During the 11-year period under consideration, there have been several changes in the status and names of territories affected by the desert locust. For maintaining continuity of records a reasonable geographical terminological compromise has been attempted in this paper.

[2] The author gratefully acknowledges the generous assistance given by the Anti-Locust Research Centre, London, in compiling information for this paper. The Centre provided all the basic data on monthly locust activity and has kindly checked and corrected the author's figures against its own records.

[3] *Report of the FAO Panel of Experts on Long-Term Policy of Desert Locust Control*, 1956, 26 p.

[4] *Report of the FAO Panel of Experts on the Strategy of Desert Locust Plague Control*, 1959, 26 p.

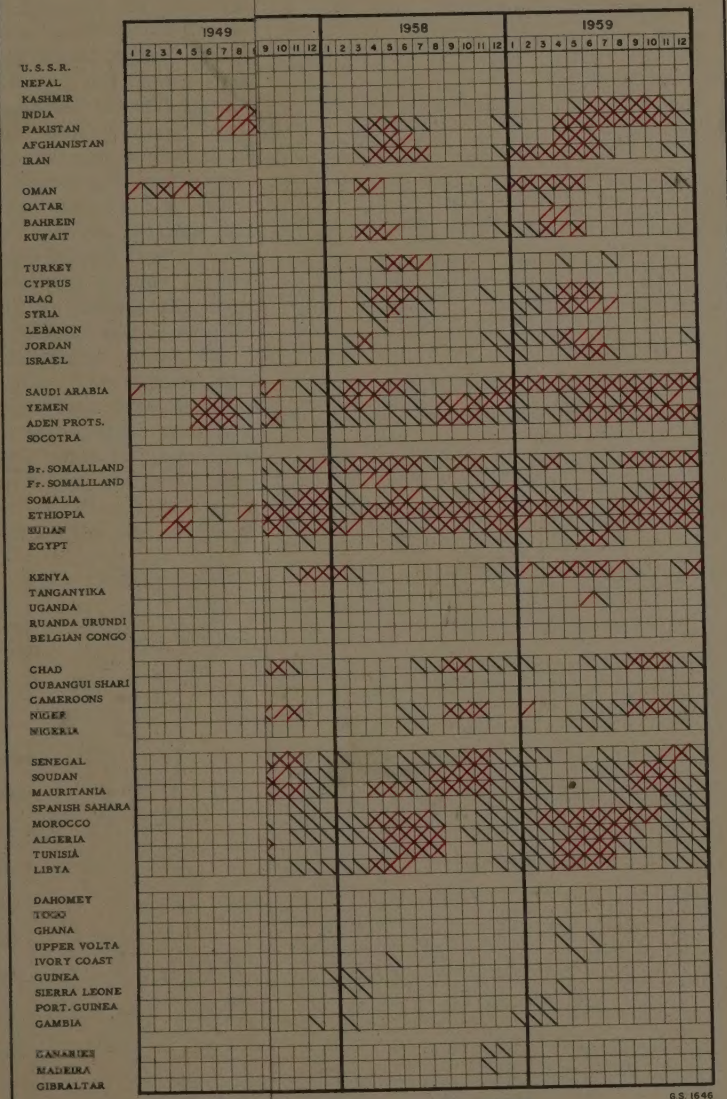


Figure 1 - O ATTACK, 1949 - 1959

plague have been studied by the author. His conclusions fully agree with those of the Panel and are now illustrated in a novel graphical form to supplement the Panel's report.

In Figure 1, all territories subject to attack by the desert locust are listed in approximate geographical order. The reported occurrence of swarms and hopper bands in each territory is indicated for each month during the 11-year period from January 1949, when the present plague became active, to December 1959, when the plague still continued.

This presentation aims at providing a global picture in time and area but it must be appreciated that it suffers from oversimplification in various respects. No attempt is made to indicate the degrees of infestations; the presence of one swarm in a territory is not differentiated from the presence of many swarms. The reports upon which the chart is based are certainly incomplete and may be inaccurate; thus, some hopper infestations are shown when no parent swarms had been reported from the area; some swarms may have been of other locust species. No weight is given to the size of the territory; the [illegible]

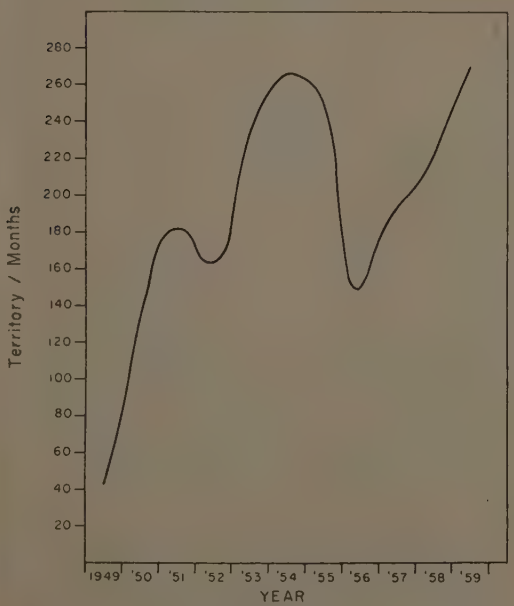


Figure 2. Annual desert locust plague intensity measured in territory/months for the 11-year period 1949 to 1959.

infestation in a large country has the same weight as an infestation in a small country. While having no mathematical significance, the figures available from the chart can, however, be used to indicate trends.

In Figure 2, the annual plague intensity, measured in territory/months, is plotted during the 11-year period. It shows a rapid spread of the plague from 1949 to 1951, a slight regression in 1952, and then a further spread to a peak in 1954. Thereafter, there was a considerable contraction to a low level in 1956, followed by a steady increase continuing through 1959, when the plague reached the present maximum activity. The graph indicates how rapidly a considerable decrease of activity may be offset by subsequent resurgence. Nevertheless, it suggests that concentrated control operations would have had the best chance of checking plague development at the commencement of activity in 1949 and subsequently in 1952 and again in 1956.

Figure 3 illustrates the average monthly frequencies of the total and of the hopper-infested area by number of infested territories. The total infested area reaches a maximum in May and rises to another high level lasting from November to January; it falls to a marked minimum during the third quarter of the year, as emphasized by the Panel of Experts held in 1959, especially in August-September. Minimum hopper infestations occur from November to February but even if this breeding were liquidated, the balance of swarms available during this period would perpetuate the plague.

Figure 4, based on the above conclusions from Figures 2 and 3, shows the monthly frequencies of the total number of infested territories for the two minimal years of activity, 1952 and 1956, including with each year the five previous months.

The contraction of the plague during the third quarter of both these years is evident. During the months of minimal activity infestations were limited to:

September 1952	August 1956
India	Oman
Pakistan	Ethiopia
Iran	Sudan
Somaliland Protectorate	Chad
	Niger
Somalia	Soudanese Republic
Ethiopia	

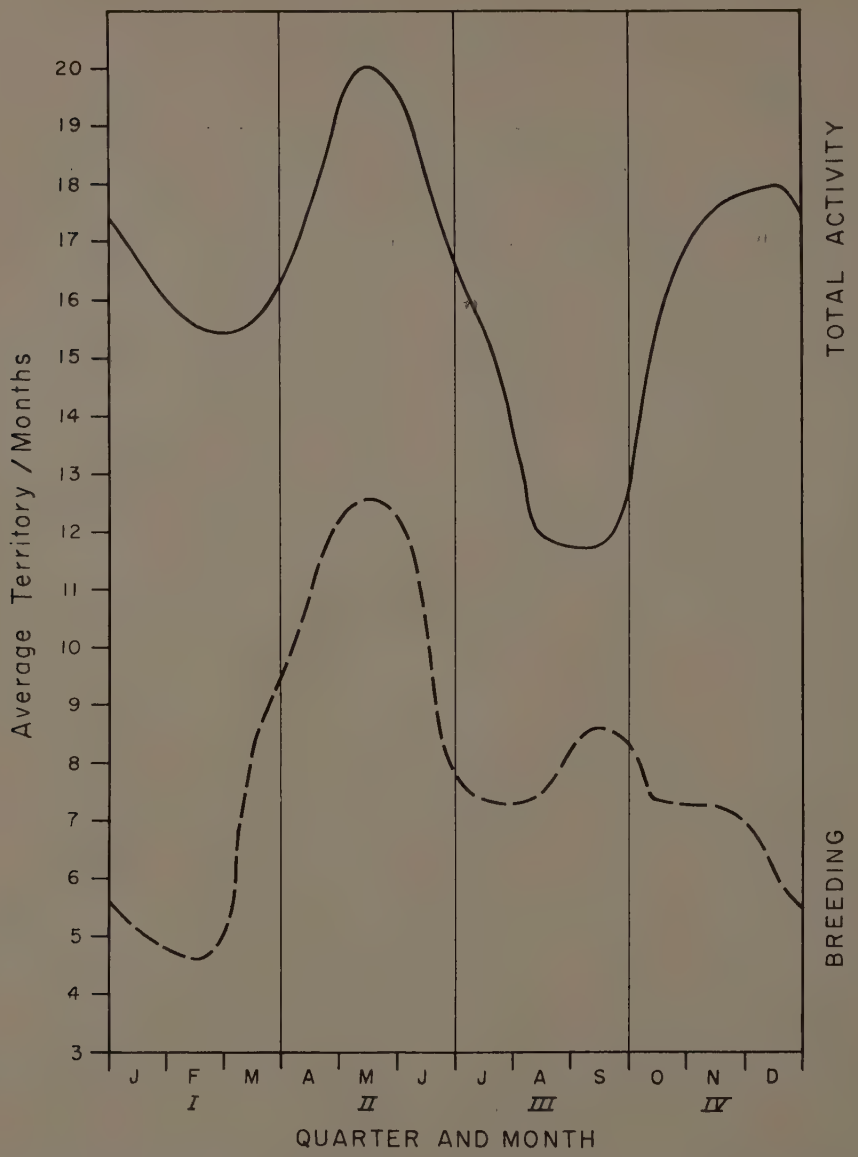


Figure 3. Average monthly frequencies of the total locust activity and of breeding by number of infested territories.

Figure 4 also shows the rather exceptional regression during the fourth quarter of 1951, attention to which was called by the FAO International Conference on Control of the Desert Locust, Rome, October 1951, as possibly providing an opportunity to inflict a severe check on the plague's progress.

The above list of territories is an example

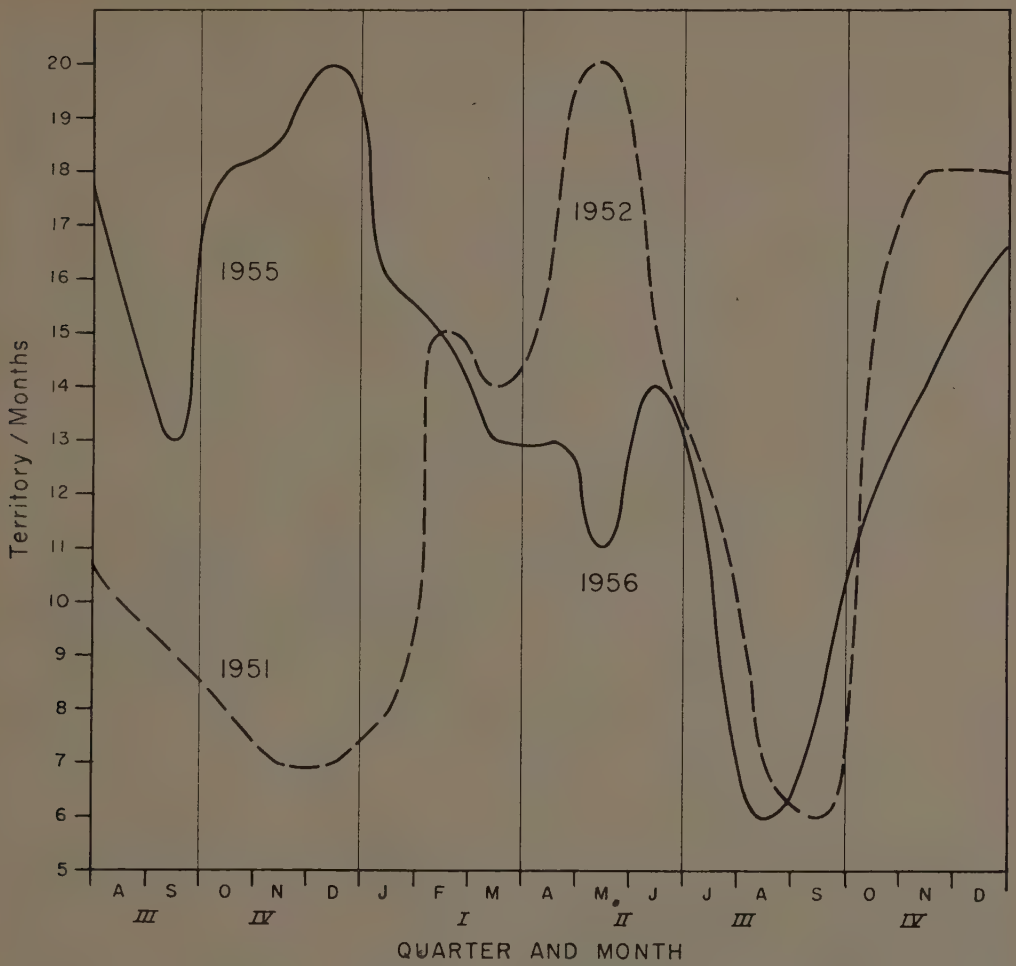


Figure 4. Monthly frequencies of total numbers of infested territories during 1951-52 and 1955-56.

of the importance of the high frequency-infested areas, all of which, as shown in the territorial totals of Figure 1, occur in the central belt. It becomes clear how about 20 territories around the periphery of the desert locust invasion region would not be attacked if control were complete along the central belt.

The present note illustrates once again the necessity for a global approach to the desert locust problem, owing to the interdependency of infestations wherever they may lie within the total invasion region. It may also suggest directions along which a global strategy of attack might be developed.

OUTBREAKS AND NEW RECORDS

PERU

C. Bazán de Segura, Comité de Defensa Técnica del Algodón, Lima

New symptoms of Verticillium wilt of cotton

The usual symptoms caused by *Verticillium albo-atrum* on cotton in Peru agree with those described in the United States and other countries, consisting mainly of a distinct mottling of the leaves with yellowish brown irregular areas on the leaf margins and between the principal veins (Figure 1). Affected leaves curl, shrink and wither but remain attached to the stem.

During the 1959/60 growing season, which in the Rimac Valley on the Pacific coast showed characteristics of a year of severe Verticillium wilt, symptoms different from the usual ones were observed. Leaf veins and adjacent tissues became violet-colored, later turning into brown and necrotic. On the remaining areas of the leaf surface appeared violet, more or less round spots, measuring 4 to 6 millimeters in diameter. Those spots later also turned into brown and necrotic and surrounding tissues became yellow (Figure 2).

Figure 1. Cotton leaves showing usual symptoms of Verticillium wilt caused by *Verticillium albo-atrum*.

Specimens with these unusual symptoms were first found in wilt-susceptible cotton varieties in the experiment field of the Instituto de Genética Vegetal of the Sociedad Nacional Agraria at La Molina. Later in the season, similar symptoms were observed at the El Carmen farm in the Huacho Valley.

Figure 2. Leaves of cotton variety Tanguis, showing unusual symptoms caused by *Verticillium albo-atrum*.

The relationship between these unusual symptoms and *Verticillium albo-atrum* was ascertained by isolations. In isolations made on the potato-dextrose-agar from infected leaf veins and spots, *Verticillium albo-atrum* was found in as many as 80 percent of the cultures obtained.

It is believed that these unusual symptoms of Verticillium wilt occur only on cotton varieties highly susceptible to wilt and only under conditions especially favorable to the development of the disease.

PLANT QUARANTINE ANNOUNCEMENTS

BELGIUM

Royal Decree of 7 October 1959, published in the *Moniteur belge* Vol. 129, No. 268 on 24 October 1959, concerns measures for preventing the introduction and spread of Verticillium wilt of hops.

Importation of hop cuttings is permitted only if each consignment is accompanied by a certificate issued by the plant protection service of the country where the hops were grown, stating that the consignment is free from Verticillium wilt caused by *Verticillium alboatrum*. In addition, the names of the consignor and the consignee, the place of cultivation, the scientific name and number of cuttings must be indicated in the certificate. If necessary, a translation of the certificate in French or Dutch will be required. The consignments may be imported only through designated customs offices and are subject to inspection.

Imported cuttings must be planted in the holding of the consignee for one growing season under the supervision of the Belgian Plant Protection Service.

The Ministry of Agriculture may grant exemptions for imports of hop cuttings for scientific purposes.

CHILE

1. Decree No. 694 of 31 August 1959, published in the *Diario Oficial* No. 24,455 on 30 September 1959, revokes Decree No. 482 of 10 July 1956 and amends Decree No. 622 (Article 43, paragraph 1) of 15 May 1950 as concerns the importation of flower bulbs.

Bulbs, tubers, corms and roots of tulips, narcissus and narcissus hybrids, lily and species of the genus *Amaryllis*, anemones, callas (*Zantedeschia* spp.), clivias, gladiolus, hyacinths, irises, watsonias and similar flowers destined for importation must originate from an area free from the potato root eelworm (*Heterodera rostochiensis*). This should be indicated in the phytosanitary certificate issued by the country of origin. Furthermore, such materials must be free from soil and washed, and have been fumigated at the port of shipment for two hours with methyl bromide at the rate of 1.5 pounds per 1,000 cubic feet when temperature was 27°C. or higher, or 2 pounds per 1,000 cubic feet when temperature was 15°C. Fumigation may also be carried out at the port of entry.

These requirements also apply to tubers, bulbs and fleshy roots, such as onions, garlic, sweet potatoes, radish, etc., destined for human and animal consumption.

2. Decree No. 866 of 17 November 1959, published in the *Diario Oficial* No. 24,499 on 21 November 1960, revokes Decree No. 648 of 18 August 1959 and amends Decree No. 622 of 15 May 1950 concerning the importation of potatoes.

Potatoes for consumption may be imported only under a permit issued by the Ministry of Economy. Each consignment must be accompanied by a phytosanitary certificate issued by the competent authority of the country of origin and visaed by the Chilean consul, attesting that the potatoes originate from an area free from potato root eelworm and ring rot (*Corynebacterium sepedonicum*).

Importation of seed potatoes or tubers of any species of the genus *Solanum* is prohibited from 31 January 1960, except by the technical services of the Ministry of Agriculture and fiscal agencies. Only varieties of the type resistant to late blight or other serious diseases may be imported and each variety must not exceed 5,000 kilograms in quantity. In case of new varieties where reaction to disease has not been determined, each variety must not exceed 25 kilograms. Imported seed potatoes will be grown under quarantine supervised by the Plant Quarantine Department.

FRANCE

An Order of 12 January 1960, published in the *Journal officiel* Vol. 92, No. 37 on 13 February 1960, prohibits the importation into Metropolitan France, including Corsica, of cuttings, scions and seedlings of citrus of any origin, except those from Algeria. Imports of such materials from Algeria should be certified that they have been grown under supervision of the Algerian Plant Protection Service. The Minister of Agriculture may grant exemptions for the importation of citrus cuttings, scions or seedlings by scientific institutions for research or experimental purposes.

UNITED STATES

A Foreign Quarantine Notice of 17 November 1959, published in the *Federal Register* Vol. 24, No. 227, 20 November 1959, amends the administrative instructions prescribing the method of treatment of imported yams, under Quarantine No. 56. Previously, only yams from the West Indies were permitted entry into the United States. The present amendment extends to all countries the privilege of shipping yams to the United States under permit, subject to fumigation at the port of entry. The same requirements as for yams imported from the West Indies are applicable to yams imported from all countries (see *FAO Plant Prot. Bull.* 7 : 103. 1959). As no yam pests of plant quarantine importance are known to exist in Japan, fumigation is not required for importation of yams produced in Japan unless inspection indicates their infestation or infection with important plant pests.

NEWS AND NOTES

FAO MEETING ON DATE PRODUCTION AND PROCESSING

The first FAO International Technical Meeting on Date Production and Processing was held in Tripoli, 5-11 December 1959. During the discussions, much attention was given to problems concerning date diseases and pests, especially in relation to their effective control and the prevention of their spread.

The bayoud disease caused by *Fusarium albedinis* was regarded as one of the most dangerous diseases of date palm. It inflicts tremendous losses, especially in Morocco and parts of Algeria. As no efficient control method is known, the meeting recommended that research on this disease be intensified, with emphasis on the development of resistant varieties. To prevent its further spread, the adoption of strong plant quarantine measures was recommended. The transport from infested areas of date palms and parts of palms and products of date origin should be prohibited and the importation of seeds from areas infested or suspected of being infested should require permission in advance.

The control of the date palm scale, *Parlatoria blanchardi*, by chemical means proves difficult and expensive. As biological control has given promising results, the meeting recommended that this aspect should be included in the programs of all research stations interested in date production.

One of the beetles affecting palms, *Oryctes boas*, was reported to have destroyed a considerable number of date palms in Somalia and the Hofuf area of Saudi Arabia.

The "bending head" disease, the cause of which is yet unknown, was reported by representatives of Libya, Mauritania and the United States but the reported symptoms appeared to differ. It is therefore not clear whether the disease in different countries is due to the same cause.

In order to facilitate exchange of information on pest and disease problems, the meeting recommended that each date-producing country publish a list of pests and diseases, with anotations on their incidence and geographical distribution.

Stabilimento Tipografico Fausto Failli - Via Tuscolana, 128, Roma

GRASSES IN AGRICULTURE

FAO Agricultural Studies No. 42

A global review of the adaptation, management, improvement and utilization of cultivated grasses in dryland and irrigated agriculture, this authoritative volume is based on information supplied by technicians from all parts of the world and on the wide personal experience of its authors. It indicates some problems of present concern to grass specialists and describes the methods being adopted to overcome them.

The agronomy of grasses is discussed in its relation to farm planning, soil fertility, land preparation, grazing, artificial fertilizers, and the production and distribution of seed. Biology, genera and species of grasses are also reviewed in some detail, including the physiology and local adaptation of grasses, plant introduction, selection and breeding, as well as the distribution and agricultural value of certain species.

In addition to numerous references for further reading on the subject of grass agronomy, this publication includes a full glossary of bibliographical titles and an index of subject and botanical names. A table of conversion factors also appears for reader reference.

Available at FAO, Rome, Italy, or from local sales agents. English (clothbound), French and Spanish editions.

$4.50 or 22s. 6d.

SALES AGENTS FOR FAO PUBLICATIONS

ARGENTINA	Editorial Sudamericana, S.A., Alsina 500, Buenos Aires.
AUSTRALIA	Melbourne University Press, 369 Lonsdale Street, Melbourne, C.1.
AUSTRIA	Wilhelm Frick Buchhandlung, Graben 27, Vienna 1.
BELGIUM	Agence et Messageries de la Presse, 14/22 rue du Persil, Brussels.
BOLIVIA	Librería y Editorial "Juventud," Plaza Murillo 519, La Paz.
BRAZIL	Livraria Agir, Rua Mexico 98-B, Rio de Janeiro
BURMA	(*Wholesale*) Orient Longmans Private Ltd., 17 Chittaranjan Avenue, Calcutta 13, India.
CANADA	Queen's Printer, Ottawa.
CEYLON	M. D. Gunasena and Co. Ltd., 217 Norris Road, Colombo 11.
CHILE	Sala y Grijalbo Ltda., Bandera 140-F, Casilla 180-D, Santiago.
COLOMBIA	"Agricultura Tropical," Carrera 13, No. 13-17, Bogotá; Librería Central, Calle 14, No. 6-88, Bogotá
COSTA RICA	Imprenta y Librería Trejos, S. A., Apartado 1313, San José.
CUBA	René de Smedt, La Casa Belga, O'Reilly 455, Havana.
DENMARK	Ejnar Munksgaard, Norregade 6, Copenhagen K.
ECUADOR	"La Hacienda," Escobedo No. 1003 y P. Icaza, Casilla No. 3983, Guayaquil; Librería Muñoz Hnos. y Cía., Apartado 522, Quito.
EL SALVADOR	Manuel Navas y Cía., 1ª Avenida Sur 35, San Salvador.
ETHIOPIA	International Press Agency, P.O. Box 120, Addis Ababa.
FED. OF MALAYA	Caxton Stationers Ltd., 13 Market Street, Kuala Lumpur.
FINLAND	Akateeminen Kirjakauppa, 2 Keskuskatu, Helsinki.
FRANCE	Les Editions A. Pedone, 13 rue Soufflot, Paris 5e.
GERMANY	Paul Parey, Lindenstrasse 44-47, Berlin SW 61.
GREECE	"Eleftheroudakis," Constitution Square, Athens.
GUATEMALA	Sociedad Económico Financiera, Edificio Briz, Despacho 207, 6ª Av. 14-33, Zona 1, Guatemala.
HAITI	Max Bouchereau, Librairie "A la Caravelle," B.P. 111-B, Port-au-Prince.
HONG KONG	Swindon Book Co., 25 Nathan Road, Kowloon.
ICELAND	Halldor Jonsson, Mjostraeti 2, Reykjavik; Jonsson and Juliusson, Garöastraeti 2, Reykjavik.
INDIA	(*Wholesale*) Orient Longmans Private Ltd., 17 Chittaranjan Avenue, Calcutta 13; Nicol Road, Ballard Estate, Bombay 1; 36-A Mount Road, Madras 2; Kanson House, 24/1 Asaf Ali Road, Post Box 386, New Delhi; Gunfoundry Road, Hyderabad 1; (*Retail*) The Oxford Book and Stationery Co., Scindia House, New Delhi; 17 Park Street, Calcutta.
INDONESIA	Pembangunan Ltd., 84, Gunung Sahari, Jakarta.
IRAQ	Mackenzie's Bookshop, Baghdad.
IRELAND	The Controller, Stationery Office, Dublin.
ISRAEL	Blumstein's Bookstores Ltd., P.O. Box 4101, Tel Aviv.
ITALY	Libreria Internazionale Ulrico Hoepli, Galleria Piazza Colonna, Rome; A.E.I.O.U., Via Meravigli 16, Milan.
JAPAN	Maruzen Company Ltd., 6 Tori-Nichome, Nihonbashi, Tokyo.
KOREA	The Eul-Yoo Publishing Co., Ltd., 5, 2-Ka, Chong-ro, Seoul.
MEXICO	Manuel Gómez Pezuela e Hijo, Donceles 12, Mexico, D.F.
MOROCCO	Centre de Diffusion Documentaire du B.E.P.I., 8, rue Michaux-Bellaire, Rabat.
NETHERLANDS	N.V. Martinus Nijhoff, Lange Voorhout 9, The Hague.
NEW ZEALAND	Whitcombe and Tombs Ltd., Auckland, Wellington, Hamilton, Christchurch, Dunedin, Invercargill, Timaru.
NORWAY	Johan Grundt Tanum Forlag, Kr. Augustsgt. 7a, Oslo.
PAKISTAN	(*East*) Orient Longmans Private Ltd., 17 Nazimuddin Road, Dacca.
	(*West*) Mirza Book Agency, 9-A, Shah Alam Market, Lahore
PANAMA	Agencia Internacional de Publicaciones, J. Menéndez, Plaza de Arango No. 3, Panama.
PARAGUAY	Agencia de Librerías de Salvador Nizza, Calle Pte. Franco No. 39-43, Asunción.
PERU	Librería Internacional del Peru, S.A., Casilla 1417, Lima.
PHILIPPINES	The Modern Book Company, 518-520, Rizal Avenue, Manila.
POLAND	Ars Polona, Krakowskie Przedmiescie, 7, Warsaw.
PORTUGAL	Livraria Bertrand S.A.R.L., Rua Garrett 73-75, Lisbon.
SPAIN	José Bosch Librero, Ronda Universidad 11, Barcelona; Librería Mundi-Prensa, Castelló 37, Madrid; Librería General, Independencia, 8, Saragossa.
SWEDEN	C.E. Fritze, Fredsgatan 2, Stockholm 16; Gumperts A.B., Göteborg; Henrik Lindstahls Bokhandel, Odengatan 22, Stockholm.
SWITZERLAND	Librairie Payot, S.A., Lausanne and Geneva; Hans Raunhardt, Kirchgasse 17, Zurich 1.
TAIWAN	The World Book Company Ltd., 99 Chungking South Road, Section 1, Taipeh.
THAILAND	Requests for FAO publications should be addressed to: FAO Regional Office for Asia and the Far East, Maliwan Mansion, Bangkok.
TUNISIA	Victor Boukhors, 4 rue Nocard, Tunis.
TURKEY	Librairie Hachette, 469 Istiklal Caddesi, Beyoglu, Istanbul.
UNION OF SOUTH AFRICA	Van Schaik's Book Store, Pty. Ltd., P.O. Box 724, Pretoria.
UNITED ARAB REPUBLIC	Librairie de la Renaissance d'Egypte, 9 Sh. Adly Pasha, Cairo.
UNITED KINGDOM	H.M. Stationery Office, P.O. Box 569, London S.E.1.
UNITED STATES OF AMERICA	Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N.Y.
URUGUAY	Hector d'Elia, Oficina de Representación de Editoriales, Plaza Cagancha 1342, Montevideo.
VENEZUELA	Suma, S.A., Sabana Grande 102, "El Recreo," Caracas.
YUGOSLAVIA	Drzavno Preduzece, Jugoslovenska Knjiga, Terazije 27/11, Belgrade; Cankarjeva Zalozba, P.O.B. 41, Ljubljana
OTHER COUNTRIES	Requests from countries where sales agents have not yet been appointed may be sent to: Distribution and Sales Section, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

FAO publications are priced in U.S. dollars and pounds sterling. Payment to FAO sales agents may be made in local currencies.